Notes

[1] A more complete description of the NBDS may be found in the *Social Security Bulletin,* Vol. 56, No. 3, 1993, pp. 88-94.

[2] The Bureau of the Census uses 125 percent of the poverty line as a cutoff for those referred to as "near-poor." We have chosen to include a broader group of the vulnerable elderly. In 1996, 150 percent of the poverty line was $9,484 for individuals and $14,226 for couples aged 65 or older.

[3] As indicated in table 1, the value of food stamps was also included in this income measure. However, food stamps alone caused very little change in poverty levels, especially in 1991. Almost all of the change was due to including imputed net rent, measured as 5 percent of home equity. See Shaw and Yi (1997a) for a description of the effects of including this and other measures of home equity and other assets in the income measure.

[4] Fluctuations of income around the poverty line may account for the difference in our findings from those of Coe (1988), who found the probability of leaving poverty about as high for older persons as that for younger persons.

[5] A change in the date for the annual cost-of-living increase occurred in 1983 and led to slightly smaller increases in benefits than in the CPI over the 9 years between interviews. The smaller increase in benefits brought about by this change amounted to less than $50 per month for all but the higher earning beneficiaries and affected very few at the poverty and near-poverty levels.

[6] The conclusions mentioned here are confirmed in logistic regression analyses of the factors predicting the likelihood of poverty for widows in Shaw and Yi (1997a; 1997b). See also Choudhury and Leonesio (1997), who found poverty in old age to depend on long-term economic status.

[7] The largest difference would occur if the widows did not receive survivor benefits until they reached age 65. For widows receiving survivor benefits before 65, the difference is smaller; below age 62, both would receive the same benefit,

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Why SIPP and CPS Produce Different Poverty Measures Among the Elderly

Introduction

The March Supplement to the Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP) are the two major sources of information about the level and distribution of economic well-being among U.S. households. The two surveys have shown diverging estimates of the poverty rate, particularly among the elderly. The SIPP-based poverty rate for older Americans is about 30 percent below that indicated by the CPS. The patterns in the two surveys diverge even more sharply for select subgroups of the elderly population. The purpose of this research is to document the divergence between SIPP and CPS poverty measures, focusing on the elderly population, and to explain why this divergence arises, with particular attention to the role played by the reporting of various sources of income.

Table 1 shows poverty rates, income-to-needs ratios, and poverty gaps for the elderly and nonelderly populations, as well as for several demographic subgroups among the elderly. In terms *ofpoverty rates,* the SIPP consistently produces lower estimates for all subgroups and for all four years considered (1987, 1988, 1990, and 1991). On average across the four years, the SIPP poverty rates for the aged are about 27 percent lower than in the CPS (about 9 *versus* 12 percent). When poverty rates are disaggregated by demographic characteristics among the elderly in relative terms, we observe larger SIPP-CPS discrepancies among men than among women (39 percent lower rates in SIPP for men and 22 percent for women), and larger discrepancies for married than nonmarried persons, and for those living with others than for those living alone. Along the age dimension, no clear pattern of differences stands out: In both surveys, poverty increases sharply with age, but the age gradient is not noticeably different across the two surveys.

SIPP not only finds *fewer* poor people, it also finds that those counted as poor are on average somewhat *better off* than their (more numerous) CPS counterparts. An easily interpretable measure of well-being among the poor is the average *income-to-needs ratio* (the average of the ratio of income to the poverty line). SIPP and CPS differ less along this dimension than with respect to the poverty rates. The average ratio among the SIPP elderly is about 78 percent and it is 7 1 percent in the CPS. The

Table 1 .-Summary of SIPP-CPS differences in poverty measures, 1987-91

[In percents]

Characteristic	1987			1988			1990			1991	
	SIPP	CPS	Percent difference[1]	SIPP	CPS	Percent difference[1]	SIPP	CPS	Percent difference[1]	SIPP	CPS
Poverty rates:											
All persons	11.1	13.4	-16.7	10.8	13.0	-17.2	10.5	13.5	-21.9	12.3	14.2
Persons under age 65	11.5	13.5	-15.0	11.0	13.2	-16.6	10.9	13.7	-20.4	12.7	14.5
Persons aged 65 or older	9.0	12.5	-28.1	9.5	12.0	-20.6	8.2	12.2	-32.5	9.1	12.4
Men	5.2	8.6	-38.9	4.7	8.0	-41.5	4.7	7.6	-38.1	4.9	7.9
Women	11.7	15.3	-23.7	13.0	14.9	-12.7	10.7	15.4	-30.5	12.1	15.5
Age:											
65-69	6.9	9.5	-27.1	6.1	8.9	-31.7	6.0	8.4	-28.3	5.9	10.2
70-74	7.6	10.5	-27.5	8.8	11.3	-22.3	7.2	11.3	-36.8	7.4	11.2
75-79	7.7	14.6	-47.7	11.4	13.5	-15.5	8.3	13.3	-37.5	11.2	12.9
80 or older	15.2	18.6	-18.7	14.0	17.1	-17.9	12.6	18.6	-32.1	13.6	16.9
Marital status:											
Married	2.9	6.0	-52.0	2.3	5.6	-58.7	2.8	5.5	-49.4	2.4	5.3
Not married	16.6	20.5	-19.0	17.9	19.9	-10.0	14.8	20.3	-27.2	17.3	20.9
One-person family	20.3	24.7	-17.9	21.7	24.1	-9.8	18.2	24.7	-26.2	22.3	24.9
All members aged 65 or older	2.0	5.2	-60.8	2.4	4.6	-48.4	2.0	4.6	-57.6	1.8	4.8
Some members under age 65	5.5	8.8	-38.2	5.2	8.7	-39.4	5.0	[In per	-36.6	4.4	8.0
Income-to-needs ratio among the poor:											
All persons	61.6	56.0	9.9	62.5	55.7	12.2	61.6	56.6	8.8	61.2	55.6
Persons under age 65	59.8	54.0	10.7	60.4	53.7	12.4	59.6	54.9	8.7	59.4	53.9
Persons aged 65 or older	77.1	72.0	7.0	79.4	72.2	10.0	79.0	71.1	11.0	77.9	70.2
Poverty gap (in billions):											
All persons	$34.9	$50.8	$-3 1.4	$34.9	$52.7	$-33.9	$40.3	$60.8	$-33.6	$49.8	$68.5
Persons under age 65	32.0	46.2	-30.7	31.9	48.1	-33.6	37.3	55.1	-32.3	46.2	62.2
Persons aged 65 or older	2.8	4.6	-38.2	2.9	4.6	-36.7	3.0	5.6	-46.7	3.6	6.2

[1] The SIPP percentage minus the CPS percentage divided by the CPS percentage times 100.
Source: The Urban Institute tabulations based on March CPS and SIPP data, various years.

poor elderly are better off than the poor in the nonelderly age group in the sense of being on average closer to the poverty line, and along this dimension the two surveys do not differ at all. In fact, the ratio of the elderly to the nonelderly income-to-needs ratios is remarkably constant, both over time and between surveys, and it varies slightly around 1.30.

The third measure of poverty examined in table 1 is the poverty gap, expressed as the total dollar amount needed to bring the income of all poor families up to the poverty line. The differences in the size of the poverty gap between SIPP and CPS result from the combination of the differences in poverty rates and in the income-to-needs ratio. Since the latter differences go in the same direction, the overall poverty gap in SIPP is much lower than in the CPS. In 1990, according to SIPP, it would have taken $3 billion to bring every elderly person up to the poverty line, and $37 billion for all nonelderly persons. The corresponding figures for the CPS are $5.6 and $55 billion, respectively. Therefore, the elderly poverty gap is about 46 percent lower in the SIPP, while the nonelderly poverty gap is only 33 percent lower.

Differences in Income Measures

The relationship between income reporting and poverty is a complex one, because only the lower tail of the income distribution is involved in the determination of poverty. This creates a nonlinear relationship between differences in income reporting and differences in poverty estimates: Large differences in the reporting of certain income sources might have almost no impact in determining the differences in poverty, while other seemingly minor differences might play a substantial role.

To date, most of the work documenting the quality of income data in SIPP and CPS has focused on aggregate amounts and counts of recipients by Source. We produce separate estimates for the elderly and the nonelderly, subgroups of the elderly population, and the different segments of the income distribution. We classify income in eight separate categories and compute the share of total income going to each of the eight categories among the elderly according to each survey. Over the 4 calendar years considered, the basic pattern of income shares among the elderly as portrayed by the two

surveys is broadly similar. In both contexts, Social Security benefits are seen to account for about 40 percent of aggregate income received by the elderly; property, pension income, and wages account for approximately 25, 20, and 10 percent, respectively. Of the other sources considered (SSI, veterans' payments, self-employment earnings, and all other income), each account for less than 5 percent of the elderly's aggregate income. These broad similarities notwithstanding, the two surveys do yield modest differences in the income shares by source. Property income and wages consistently account for somewhat larger shares in the CPS than in the SIPP, while Social Security, and each of the other sources considered, almost always represent larger shares in the SIPP than in the CPS.

When we consider counts of recipients for each income source, we confirm the finding that SIPP counts *more recipients* for all sources of income. The largest differences are observed for property income and pensions, followed by wage and salary and Social Security benefits. Several features of the SIPP interview process are likely to contribute to this outcome-among them, the shorter recall period, the larger use of in-person interviews, and the overall focus of the survey on income rather than on labor force participation.

When we consider average amounts among recipients, we obtain a different picture-with the exception of self-employment income and Social Security benefits, average amounts among SIPP recipients are *lower* than their CPS counter parts. The largest relative differences are observed for wage, property, and pension income. The "selection" effect deriving from the presence of additional recipients of small amounts in SIPP can only explain part of this pattern. Other factors are at work, and these factors are specific to each income source.

We also analyze how income composition by source varies at different levels of total family income. We use multiples of the poverty line to identify five income classes. The poor, as well as those between 100 and 200 percent of the poverty line, rely heavily on Social Security benefits, while property income, pensions, and wages represent a very small share in the lower part of the income distribution. Thus, the three sources for which SIPP and CPS differ the most in terms of recipiency and amounts are heavily concentrated away from the poor and the near poor, which reduces the role of these sources in explaining the difference in poverty measures between the two surveys.

How Differences in Income Measures Translate Into Differences in Poverty Rates

We rely on a more complex analytical approach to identify more directly which sources of income help to explain the SIPP-CPS difference in poverty rates. This analytical approach is built around the idea that, for a given income source to help to make the poverty rate in the CPS higher than the poverty rate in SIPP, the amounts that go unreported or underreported in the CPS must be "critical" in keeping out of poverty those persons who *did* report them in SIPP. This condition is indeed crucial and underscores the *nonlinear* nature of the relationship between income reporting and poverty status: A source can be greatly underreported in a survey without much contributing to increasing the poverty rate if it is critical for only a small subset of the population (while it might still be relevant in explaining differences in other income-related dimensions, such as aggregate income amounts or measures of inequality).

From this perspective, a key quantity of interest is the *difference* between the two surveys in the percentage of respondents for whom a given income source is critical in keeping their family out of poverty. This concept will become more clear once we examine the estimates presented in table 2 for calendar year 1990 (very similar results were obtained when the analysis was repeated for calendar year 1988).

We first provide an overview of table 2, and then discuss in more detail each source, since the picture that emerges is quite differentiated across income types. The columns labeled A-E disaggregate the SIPP and CPS elderly population, with respect to each of the eight income sources, in the following way:

- The first three columns contain the percentage of individuals *reporting* the income source as part of family income, disaggregated by:
  - (A) the percentage of those who are poor (or counted as such by the survey);
  - (B) the percentage of those who are not poor, but *would be poor* if the income source were removed from their family income; and
  - (C) the percentage of those who are not poor, and *would not be poor* even if the income source were removed from their family income.
- The next two columns contain the number of individuals *not* reporting the income source, disaggregated by:
  - (D) the percentage of those who are poor; and
  - (E) the percentage of those who are not poor.

The entire pattern of differences contained in the five columns of table 2 must be taken into account in assessing the contribution of each income source to the poverty rate differential between the two surveys. However, the figures presented in column B are the most important, because they represent the percentage of all families that are *directly* removed from poverty thanks to each income source-the marginal anti-poverty effectiveness of that income source (holding constant the reporting of other sources of income in the two surveys). Obviously, this notion of anti-poverty effectiveness does not have any behavioral interpretation: If the source were truly removed from family income, the behavior of family members would likely change and so would the other sources of income.

A quick examination of the figures presented in column B of table 2 reveals a simple (and not unexpected) finding, common to both surveys-Social Security benefits clearly

Table 2.—Decomposing the effect of selected income sources on the poverty status of the elderly population in the SIPP and CPS, 1990

[In percents]

Income source	Reporting source in family income: Poor (A)	Reporting source in family income: Not poor: Poor if source removed (B)	Reporting source in family income: Not poor: Not poor even if source removed (C)	Not reporting source in family income: Poor (D)	Not reporting source in family income: Not poor (E)	Total	Baseline poverty rate: SIPP = 8.2, CPS = 12.2, Diff = -4.0: Poverty rate if source removed (A+B+D)	Percent of baseline difference accounted for by column "B": B / [baseline difference]
Wage and salary:								
SIPP	0.9	6.6	24.0	7.3	61.2	100.0	14.8	
CPS	1.0	7.9	21.6	11.1	58.3	100.0	20.1	
SIPP-CPS	-.2	-1.4	2.4	-3.8	2.9	.0	-5.3	-34.7
Self-employment:								
SIPP	.2	.8	7.4	8.0	83.6	100.0	9.0	
CPS	.4	.7	6.0	11.8	81.2	100.0	12.8	
SIPP-CPS	-.2	.1	1.5	-3.8	2.4	.0	-3.9	2.2
Property income:								
SIPP	3.2	3.0	78.0	5.0	10.8	100.0	11.2	
CPS	4.0	3.6	66.8	8.1	17.4	100.0	15.8	
SIPP-CPS	-.9	-.7	11.2	-3.1	-6.6	.0	-4.6	-16.7
Social Security:								
SIPP	7.4	34.8	53.1	.8	3.8	100.0	43.0	
CPS	10.7	32.7	50.5	1.5	4.7	100.0	44.8	
SIPP-CPS	-3.3	2.2	2.6	-.7	-.8	.0	-1.8	54.7
Pensions:								
SIPP	.7	3.6	51.3	7.5	36.9	100.0	11.8	
CPS	1.1	4.0	42.8	11.0	41.0	100.0	-16.2	
SIPP-CPS	-.4	-.4	8.5	-3.5	-4.1	.0	4.4	-10.5
SSI:								
SIPP	3.0	1.3	3.5	5.2	87.0	100.0	9.5	
CPS	2.9	1.1	2.5	9.2	84.3	100.0	13.2	
SIPP-CPS	.1	.2	1.0	-4.0	2.7	.0	-3.7	5.8
Veterans' payments:								
SIPP	.3	.9	5.6	7.9	85.3	100.0	9.1	
CPS	.4	.5	4.9	11.7	82.4	100.0	12.7	
SIPP-CPS	-.2	.4	.7	-3.8	2.9	.0	-3.6	8.4
Other income:								
SIPP	.8	.5	8.2	7.4	83.0	100.0	8.7	
CPS	.8	.4	6.7	11.4	80.7	100.0	12.6	
SIPP-CPS	.0		1.5	-4.0	2.3	.0	-3.8	3.2

Source: The Urban Institute tabulations based on March 1991 CPS and 1990 SIPP data

stand out as the source with by far the largest anti-poverty effectiveness. About a third of the elderly are removed from poverty thanks to Social Security benefits alone. The other income sources follow at great distance: Wages and salaries are critical for about 7 percent of the elderly, while property income and pensions directly remove from poverty only between 3 and 4 percent, and SSI benefits another 1 percent. The last finding should not be surprising-a program like SSI has a limited role in removing families from poverty, while it has a much larger role in reducing the poverty gap among the poor.

What is most relevant to our attempt to explain the poverty rate differential is the fact that the larger is the (positive) difference in column B of table 2 between the two surveys, the larger is the potential role of the corresponding income source in explaining why the SIPP produces lower poverty rates than the CPS.

We discuss the content of table 2 with reference to each source of income because the pattern of discrepancies varies widely across income sources. We begin with Social Security benefits as they appear to play the most important role in explaining the poverty rate differential. According to SIPP, out of the 95.4 percent of the elderly receiving Social Security benefits as part of family income (obtained by summing columns A through C in table 2), the benefits are critical in staying out of poverty for 34.8 percent of them. Another 7.4 percent of the SIPP elderly are counted as poor *despite* receiving Social Security benefits, while for more than half of

them, 53.1 percent, these benefits are not critical, in the sense that all other sources of income combined would be sufficient to keep them above the poverty line. Of the remaining 4.6 percent who are nonrecipients, the majority (3.8 percent) are not poor. Only 0.8 percent of the elderly in SIPP are poor and are not Social Security recipients.

In the CPS, the picture is different in some important ways, although the discrepancies at first sight might seem trivial. Of the 93.8 percent counted as Social Security recipients, these benefits are critical for 32.7 percent and noncritical for 50.5 percent, both figures are below the corresponding ones in SIPP. By contrast, the CPS has a higher percentage of elderly who are poor despite being Social Security recipients, 10.7 percent, with a net difference of 3.3 percent with respect to SIPP. (This percent figure corresponds to a weighted count of about 1 million elderly persons.) The overall difference in elderly poverty rates between the two surveys, which is 4 percentage points (12.2 in the CPS *versus* 8.2 percent in the SIPP, table 1), is split unevenly between Social Security recipients and nonrecipients: 3.3 percentage points represent excess *poor* in the CPS who are also Social Security recipients (column A) while the remaining 0.7 are poor nonrecipients (column D).

What matters the most for the line of reasoning developed here is the fact that the SIPP-CPS differences shown in table 2, columns B and C for Social Security benefits are positive, while all the others differences are negative. The SIPP has a total *surplus* of about 4.8 percent of the elderly classified as *nonpoor* Social Security recipients: for less than half of these (the 2.2 percent shown in column B), Social Security benefits are critical in keeping them above poverty. Thus, SIPP has a surplus of nonpoor critical Social Security recipients (2.2 percent), while the CPS has a surplus of poor recipients (-3.3 percent); and poor nonrecipients (-0.7 percent).

There are two plausible types of reporting errors that can account for the observed pattern of differences shown in table 2. First, some elderly who in SIPP show up as critical recipients in the CPS might fail to entirely report their benefits. While appearing in column B for SIPP, these same recipients would appear in column D for the CPS, swelling the ranks of those counted as poor nonrecipients. Given the SIPP deficit of 0.7 percent in column D, it is plausible to assume that this figure could be "moved" from column B to column D. Second, another group of elderly who show up as critical recipients in SIPP, might severely underreport their amounts of Social Security in the CPS, and end up being classified as poor recipients. The remaining 1.5 percent of SIPP critical recipients in column B (2.2 minus 0.7 percent) could thus underreport their Social Security benefits to an extent that is large enough to make them poor, while still being counted as recipients.

Overall, 2.2 percent of all elderly seem to be classified as poor in the CPS but not in SIPP, for reasons that can be plausibly attributed to the differential reporting of Social Security benefits. Comparison of this percentage to the observed difference in the overall poverty rate for the aged in the two surveys (4 percentage points) indicates that about 55 *percent of the differential could be explained by errors in reporting Social Security benefits.*

This result must be interpreted with some caution. One important *caveat* is that multiple sources of income can be "critical" at the same time, and this can lead to some exaggeration of the importance of a given source if not taken into account. Further work reported in Martini and Dowhan (1997) explored instances in which both Social Security and another income source were critical to determining the elderly individual's poverty status. This work showed that in approximately 9 out of 10 instances involving Social Security, it is the only source critical to the determination of the elderly individual's poverty status. Taking this aspect of the effect of multiple sources into account only reduces the SIPP surplus of nonpoor elderly that Social Security is critical in keeping out of poverty from 2.2 to 2.0 percent. Consequently, half of the differential in elderly poverty rates between the two surveys can still be plausibly attributed to better measurement of Social Security income in the SIPP.

Table 2 reports the same type of calculations for the other seven income sources. For most of these, it is quite clear that, when considered in isolation, their reporting in the two surveys can play only a marginal role or no direct role in explaining the poverty differential. In particular, property income and pensions-for which we observe the largest differences in the *overall* counts of recipients between the two surveys-do not appear to contribute directly to an explanation of the poverty differential. This is because the difference in the count of recipients does not fall in the "critical" area. For example, SIPP has an excess of over 11 percent of property income recipients among the elderly, but for most of these recipients, their property income is not critical in keeping them out of poverty. In fact, all the SIPP additional recipients show up in column C in table 2, while in column B the SIPP shows *fewer* critical recipients of property income. A very similar pattern is observed for pensions, for which all excess SIPP recipients are in column C. A different pattern is observed for SSI and veterans' payments: SIPP shows excess recipients also in column B, so it is plausible that a small contribution to the poverty rate differential might come from underreporting of these sources in the CPS.

The foregoing discussion has focused on each source of income taken in isolation, thus ignoring the potential consequences of the simultaneous nonreporting or underreporting of *multiple* sources of income. This is a particularly complex issue on which we are not able to offer a definitive resolution. The tentative conclusion reached in Martini and Dowhan (1997) is that the interaction between Social Security benefits and pensions plays a role in explaining the portion of the poverty differential left unexplained by the analysis of table 2. In support of this evidence there is also the argument that there is more likely to be correlation in measurement error between Social Security benefits and pensions than between Social Security and most other sources. For these two sources, the month is a "natural" reference period, so SIPP is likely to be more successful at capturing both sources of income. From the

point of view of respondents, reporting these sources involves very similar cognitive processes. Reporting their amounts at the monthly level is likely to be much easier than for an entire calendar year.

Finally, we use the same analytic approach to investigate the role of other dimensions of income reporting related to differences in design between the two surveys. The shorter recall period in SIPP should create an important advantage in capturing sources of income that are received for part of the year, as well as small amounts of income. In both cases, better reporting in SIPP should lead to lower poverty rates. We find a limited role for part-year income in explaining the poverty differential. An even lesser role is played by small amounts of income-defined as amounts of less than $1,000 per year—that SIPP is indeed more likely to capture than the CPS. The reason is that these amounts of income are rarely critical in keeping SIPP families out of poverty.

The foregoing analysis has focused on poverty rates. We explored also the contribution of income sources to explaining the difference in the income-to-needs ratio among the poor. As mentioned earlier, the differences between SIPP and CPS along this dimension are not as pronounced as for the poverty rate. However, the direction of the contribution of each income source to explaining the difference in the income-to-needs ratio is the same as the contribution to the difference in poverty rates discussed in the previous sections: Social Security benefits, SSI, self-employment, and other income all tend to make the difference in income-to-needs ratio larger, while wages and salaries, property income, and pensions tend to make it smaller. The only relevant exception to this pattern concerns SSI benefits. While the different reporting of SSI did little to explain the differences in poverty rates, it has a large role in explaining why the elderly poor in SIPP look somewhat better off than in the CPS.

To summarize, differences in the reporting of *Social Security benefits* seem to be able to account for at least half of the observed poverty rate differential among the elderly in SIPP and CPS. The other half of the differential can be explained by a combination of many other factors, of which only some can be precisely identified. Among these other factors, the report discusses the role of differences in the treatment of attrition and family composition, the interaction between income sources, and the role of other aspects of income reporting, such as part-year income and small amounts of income.

Reference

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